

AMENDMENTS TO CLAIMS

1. (Currently Amended) A system for handling laser-communication multiplexing in chaotic secure communications, comprising

a system of transmitter containing a self-pulsating laser diode, wherein the self-pulsating laser diode is driven by an externally applied ac current containing the messages to be multiplexed;

a system of receiver containing a self-pulsating laser diode, wherein the self-pulsating laser diode of the receiver is driven by signals output by the transmitter, and wherein output signals from the self-pulsating laser diode of the receiver are compared with the signals output by the transmitter to obtain a difference signal including synchronized chaotic time sequences, is driven by the signals output from the transmitter and the output signals of the self-pulsating laser diode of the receiver hence forming synchronized chaotic systems; and

a low-pass filter, whereto to which the difference signal between the output signals of the transmitter and the receiver is sent, and hence is applied, said low-pass filter transforming chaotic time sequences of lower fractal dimension is transferred to the into chaotic time sequences of higher fractal dimension and the to cause a periodicity of the multiplexed messages to emerge by adjusting an appropriate parameter of the low-pass filter, whereby the thereby decoding of the multiplexed message encoded by the chaotic laser light of the transmitter end can be achieved.

2. A method for handling laser-communication multiplexing in chaotic secure communications, which comprises the following procedures,

- Applying applying a set of messages to be multiplexed and a corresponding set of ac currents to the a laser diode of the a transmitter end;
- Driving driving the laser diode of the transmitter end by the said ac current set and adjusting the amplitude and frequency of the said ac current set to produce chaotic laser signals;

- c. Driving driving the a laser diode of the a receiver end by the chaotic signals generated from the transmitter end to obtain receiver end chaotic signals, and adjusting the receiver end chaotic signals to match the chaotic signals generated from the transmitter end, and comparing the chaotic signals to obtain a difference signal containing chaotic time sequences an appropriate coupling parameter to cause the output of the receiver simplex couples to that of the transmitter, and hence forming asymptotically synchronized chaotic systems.;
- d. Taking sending the difference between the input and output of the receiver end and sending the said difference signal to a low-pass filter; and
- e. Adjusting adjusting the a parameter of the said low-pass filter, hence the to cause chaotic time sequences of lower fractal dimension is to be transferred to the chaotic time sequences of higher fractal dimension and the periodicity of the multiplexed messages is emerged to emerge, whereby the thereby decoding of the multiplexed messages encoded by the chaotic laser light of the transmitter end can be achieved.

3. (Original) The system for handling laser-communication multiplexing in chaotic secure communications as described in claim 1, wherein the parameter of the said low-pass filter is in the range 0.13-0.97.

4. (Original) The method for handling laser-communication multiplexing in chaotic secure communications as described in claim 1, wherein the parameter of the said low-pass filter is in the range 0.13-0.97.